

***Remarks***

Upon entry of the foregoing amendment, claims 1, 5-6, and 9-10 are pending in the application, with claims 1 and 6 being the independent claims. These changes are believed to introduce no new matter, and their entry is respectfully requested. Based on the above amendment and the following remarks, Applicant respectfully requests that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

***Rejections under 35 U.S.C. § 103***

Claims 1 and 6 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,532,637 to Khoury in view of U.S. Patent No. 4,628,518 to Chadwick. Applicant respectfully traverses these rejections.

Claim 1 recites *a variable current source that adds a DC current to said pair of field effect transistors in said RF transconductance circuit, said DC current adjusted so as to reduce flicker noise being generated inside the mixer circuit.* (See, claim 1) This particular claim feature of Applicant's invention is not taught by Khoury, Chadwick, or their combination, as explained below, and as explained in past office action replies.

***Khoury***

Khoury, at FIG. 3, teaches a mixer circuit with variable current sources 25, 26, 29, and 30. These current sources are described as "variable current sources which pass currents determined by current control circuit 32, whereby individual currents can be optimized for particular circumstances". (See, col. 4, lines 43-47). There is no mention in Khoury that these current sources are adjusted to provide *a variable current source that adds a DC current to said pair of field effect transistors in said RF transconductance*

*circuit, said DC current adjusted so as to reduce flicker noise being generated inside the mixer circuit, as recited in Applicant's claim 1. This fact is admitted by the Examiner in the current Office Action, on page 4, lines 5-6, "[i]t should be noticed that Khoury fails to teach how to reduce flicker noise in the mixer." (See Office Action , page 4, lines 5-6)*

***Chadwick***

Chadwick teaches a low pass filter 4 to selectively reject flicker noise that is generated by the mixer 2 from reaching the next stage. (See, FIG. 2, Chadwick) It is noted that the low pass filter 4 is separate, and not integrated with the mixer 4 , and is essentially rejecting flicker noise after it is generated by the mixer 2. In contrast, Applicant's claim1 reduces flicker noise at the source by adjusting a current source inside the mixer. In any event, Chadwick clearly does not teach *a variable current source that adds a DC current to said pair of field effect transistors in said RF transconductance circuit, said DC current adjusted so as to reduce flicker noise being generated inside the mixer circuit, as recited in Applicant's claim 1.*

***Combination of Khoury and Chadwick***

Assuming, *arguendo*, that there is sufficient motivation to combine Khoury and Chadwick, the combination still does not teach the combination of elements recited in Applicant's claim 1. Since Khoury teaches a mixer circuit based on first and second differential pair transistors, and Chadwick teaches an off-chip (i.e. standalone) filter, the only apparent combination is to put the Chadwick filter at the output of the Khoury mixer, so that the Chadwick filter rejects flicker noise generated by the Khoury mixer.

However, this combination of Khoury and Chadwick still does not teach the

combination of features recited in Applicant's claim 1. Specifically, the combination of Khoury and Chadwick fails to teach *a variable current source that adds a DC current to said pair of field effect transistors in said RF transconductance circuit, said DC current adjusted so as to reduce flicker noise being generated inside the mixer circuit*, as recited in Applicant's claim 1. Stated another way, the filter teachings of Chadwick in no way suggest a modification of Khoury, based on Chadwick, that would result in the *italicized* claim feature discussed herein. This so because the filter teachings of Chadwick have no possible technical connection or relationship to the variable current sources of Khoury, and therefore there is no reason to modify the variable current sources of Khoury to perform the recited *italicized* claim feature discussed herein. Stated yet another way, combining the Chadwick filter with the Khoury mixer might indeed address flicker noise, but it does not do so in the manner recited in Applicant's claim 1. Therefore, the Khoury/Chadwick combination is insufficient to support an obviousness rejection of the claim 1 as written, because it does not teach all of the claim limitations.

#### **Requirements for *Prima Facie* Obviousness (MPEP 2143)**

It is noted that the Examiner has the burden of putting forth the basic requirements for a *prima facie* case of obviousness to support a rejection under 35 U.S.C. § 103(a). Per MPEP 2143, a *prima facie* case of obviousness requires at least that the "prior art reference (or references when combined) must teach or suggest all the claim limitations." (See, MPEP 2143)

Based on the discussion above, it is clear that the combination of Khoury and Chadwick does not teach or suggest *a variable current source that adds a DC current to said pair of field effect transistors in said RF transconductance circuit, said DC current*

*adjusted so as to reduce flicker noise being generated inside the mixer circuit*, as recited in Applicant's claim 1. This is clearly so because the filter teachings of Chadwick do not teach or suggest any possible modifications to Khoury that would recite the *italicized* claim feature mentioned herein. Accordingly, the requirements of *prima facie* obviousness have not been met, and therefore a rejection under 35 U.S.C. 103(a) is not supported by the combination of Khoury and Chadwick.

If a future communication maintains this obviousness rejection based on the same references, then in order to further prosecution in this matter, Applicant requests that a detailed explanation be provided on how the off-chip filter teachings of Chadwick can be used to modify the variable current source teachings of Khoury. At a minimum, this would seem to be necessary to support an obviousness rejection using these two references.

Based on the discussion above, Applicant requests that the rejection under 35 U.S.C. of § 103 be removed and that claim 1 and its respective dependent claims be passed to allowance. Furthermore, claim 6 has features similar to claim 1. Therefore, claim 6 and its respective dependent claims are allowable over the cited art for the same reasons mentioned above. The addition of Kung in relation to dependent claims 9-10 does not effect the arguments made with respect to independent claim 1 and 6, and therefore these claims are allowable over Kung also, since they depend from an allowable base claim.

### ***Conclusion***

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the

Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicant believes that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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